

SMALL SATELLITES OF JUPITER: GALILEO RESULTS. Peter C. Thomas (Cornell), J. Veverka (Cornell), D. Sim-nelli (Cornell), J. Burns (Cornell), K. Klaasen (JPL), M. E. Davies (Rand), C. Chapman (SWRI), M. Belton (NOAO), and the Galileo SSI Team.

Near each periapse passage the Galileo spacecraft is able to image the four inner small satellites of Jupiter (see Tables), accumulating views from many different orienta-tions during the mission. Only Amalthea was resolved with surface features by Voyager, leaving the basic determination of the sizes, shapes, color, surface morphology, and relation of their surface properties to interactions with ring particles and to possible effects of material ejected from Io up to Galileo. Metis is embedded within the Jovian main ring, Adrastea essentially bounds the outer main ring, Amalthea is within the gossamer ring, and Thebe is near the limit of the gossamer ring, thus there is the need for coordinated data on both satellites and rings [1].

For the first 4 orbits images of Amalthea have provided new information on shape, local morphology, albedo and color. There are 5 craters with diameters over 35 km (mean radius of Amalthea is 87 km) in the 70% of the surface imaged well enough for reliable detection. They appear to be bowl-shaped, providing some very deep craters (two are ~8 km deep). Bright spots detected in Voyager data are now better resolved and appear to be small regions a few kilome-ters across, with associated areas up to 15 km wide of lesser contrast. They appear to reside on local topographic highs, and may be small areas shedding material downslope or bright craters surrounded by brighter ejecta. The latter case would require some local transport to form the asymmetric shapes of the bright patches as well as different exposure of materials by craters on topographic highs. The spots' maxi-mum albedos are two or more times that of the average Amalthea, but their colors appear only slightly different from the remainder of the very red Amalthea.

The first image of Thebe shows it to have a mean radius of about 48 km. There are three craters of diameters of 20, 30, and 25 km. The craters are nearly shoulder-to-shoulder and appear to be bowl-shaped. One area (0°N, 120°W) ap-pears to have an albedo higher by about 50% than the rest of the object. Later orbits will provide higher resolution and color coverage at different longitudes.

The first Adrastea images suggest slight errors in the ephemeris, and a size about that predicted from the Voyager data. Later orbits will give much better data on this satellite and on Metis.

TABLE 1.

Satellite	Orbital Distance (Jupiter Radii)	Radii (km)
Metis	1.79	20
Adrastea	1.81	10
Amalthea	2.54	126,75,68
Thebe	3.10	50,48,46

TABLE 2. Galileo images of small satellites.

Satellite	Number of Sequences	Best Resolution (km/pixel)
Metis	7	5.6
Adrastea	8	5.4
Amalthea	8	2.7
Thebe	8	4.4

References: [1] Carr, M. H. et al. (1995) The Galileo Imaging Team plan for observing the satellites of Jupiter. *J. Geophys. Res.*, 100, 18935–18955.

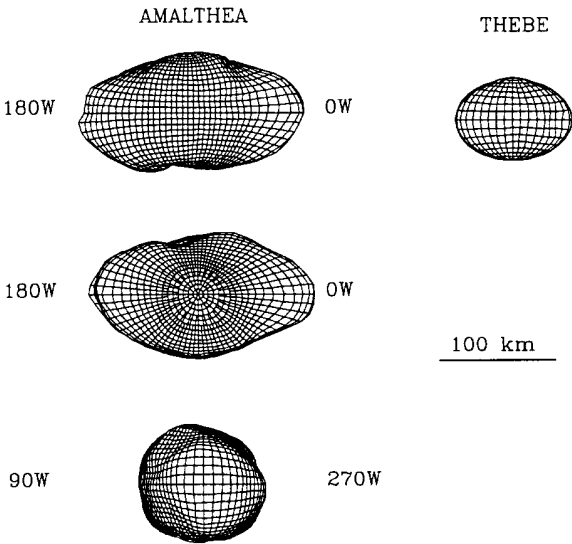


Fig. 1. The shapes of Amalthea and Thebe.